

FIG. 1

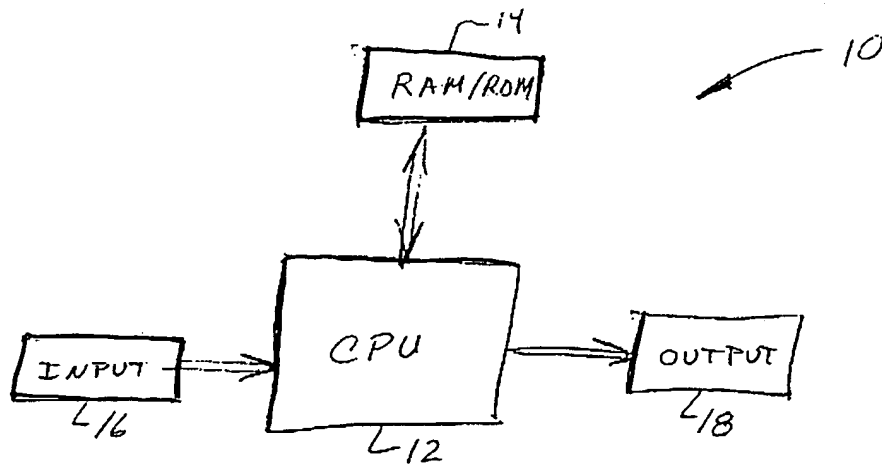


FIG. 2

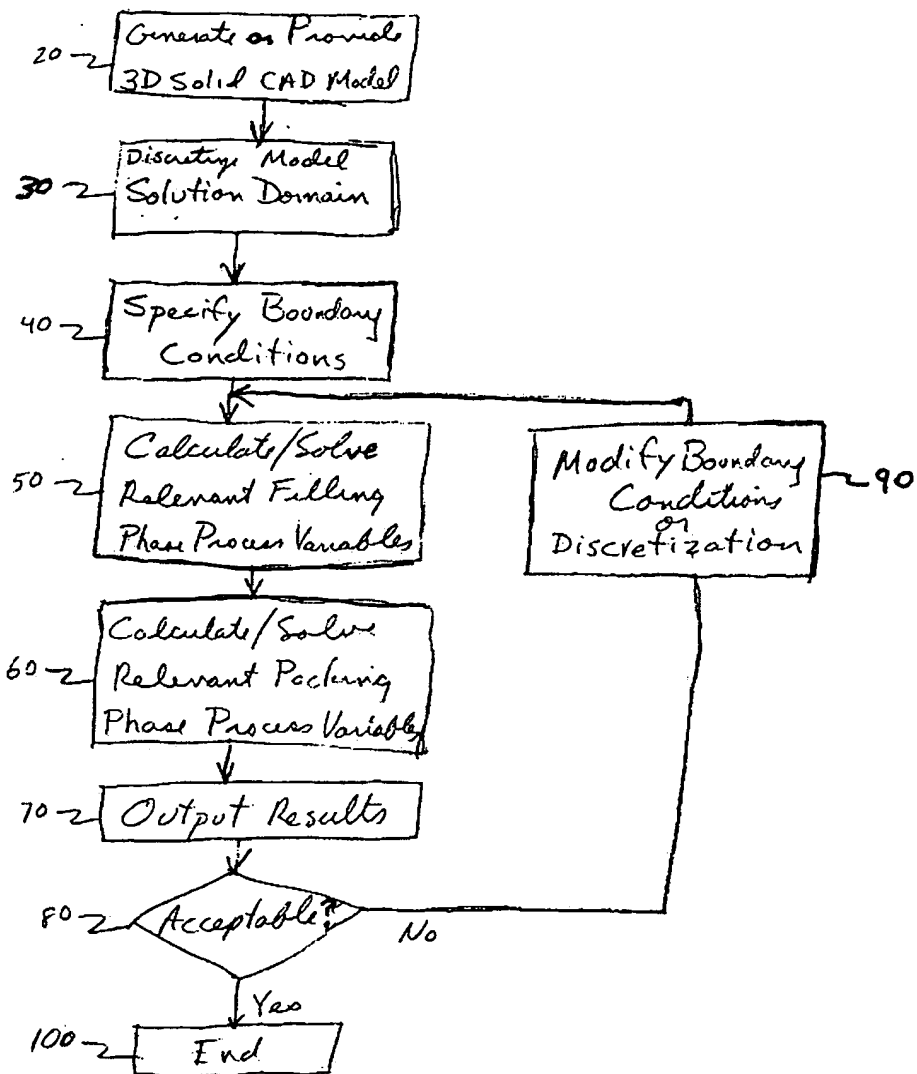


FIG. 3A & FIG. 3B

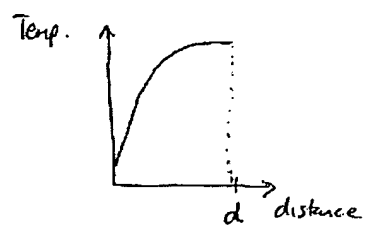
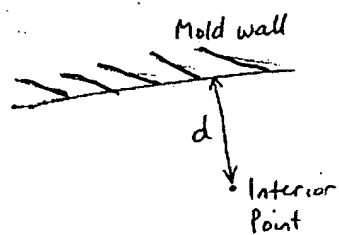


FIG. 4

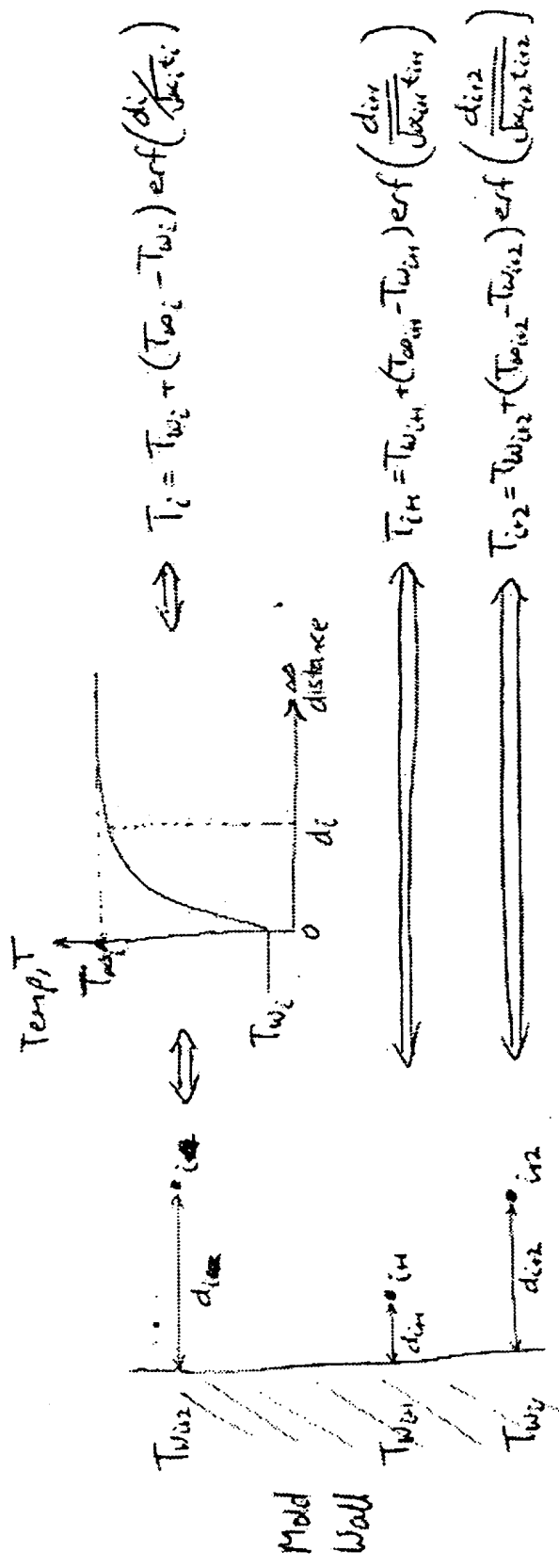


FIG. 5

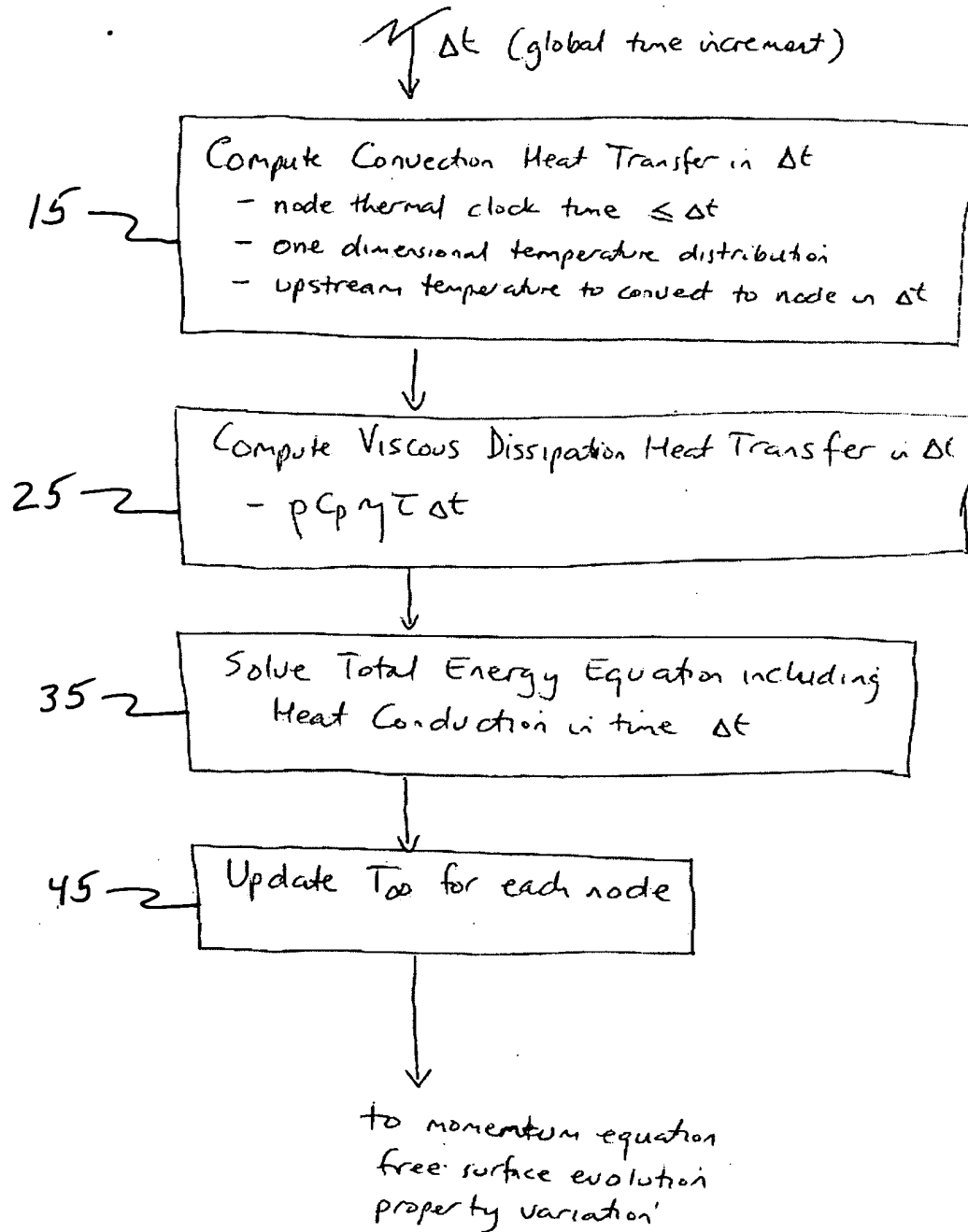


FIG. 6

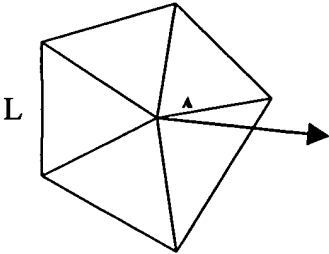


FIG. 6

FIG. 7

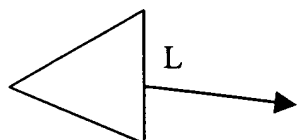


FIG. 8

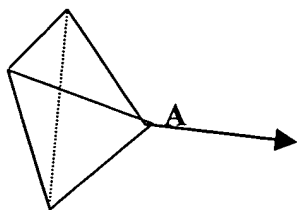


FIG. 9

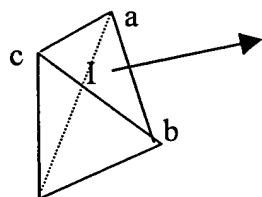
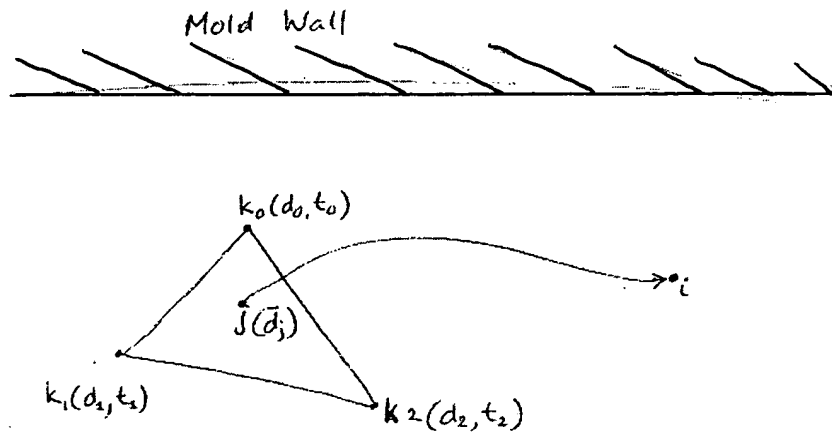


FIG. 9

FIG 10A & 10B



i = target node

j = upstream point

k_0, k_1, k_2 = nodes of element containing the upstream point

$(d_0, t_0), (d_1, t_1), (d_2, t_2)$ are the distance to the wall and node thermal clock times for each upstream node respectively

\bar{d}_j = interpolated distance to the wall of the upstream point.

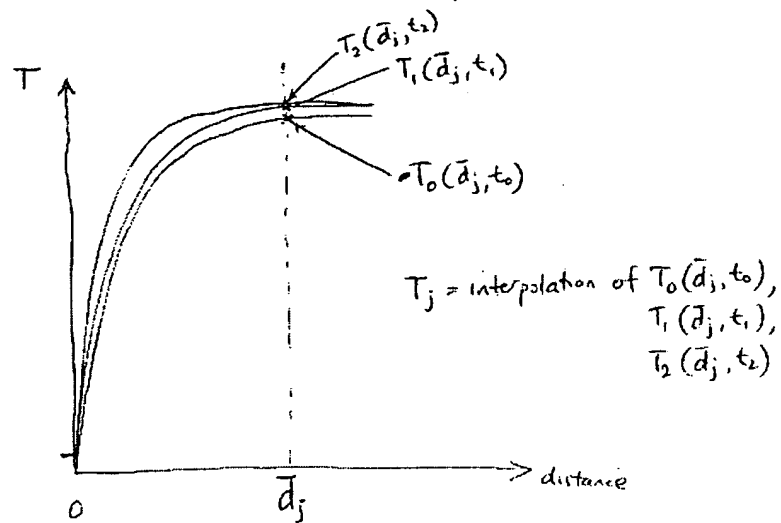


FIG. 11

For a face with one edge refined:



For a face with two edges refined:
where $A < B$



For a face with all three edges refined

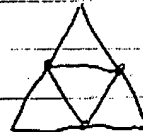


FIG. 12

Template for splitting a tet on:

1 edge :

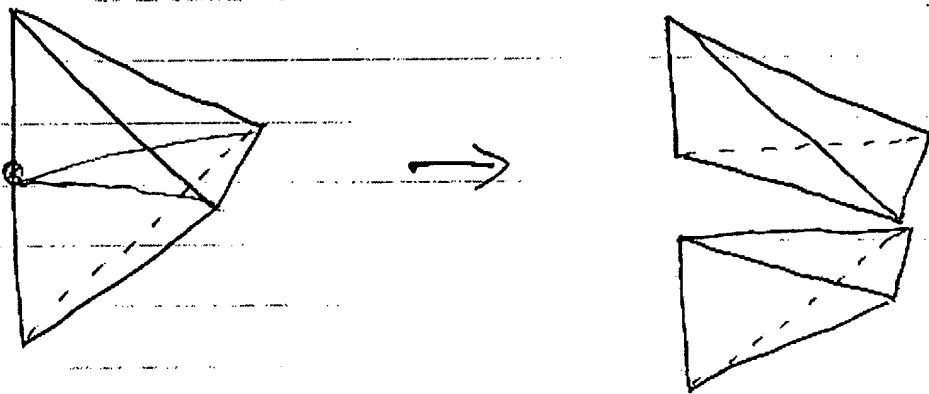
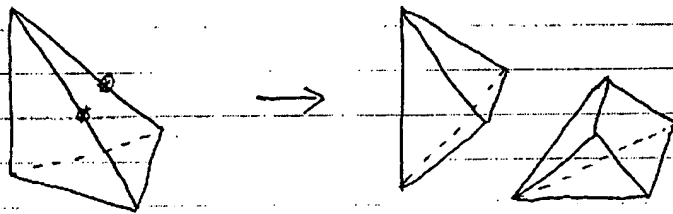


FIG. 13A

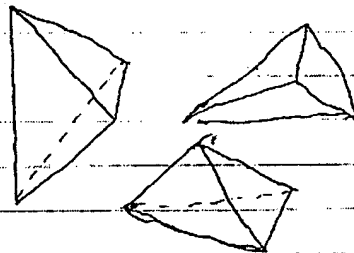
Template for splitting a tet on

2 edges



Note that there is a template for splitting the "four-sided base" pyramid

This results in:



As a close group with raw edges mark

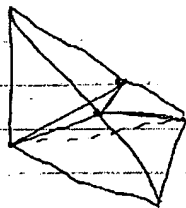


FIG. 13B

Template for splitting a "four-sided base" pyramid

into two tets

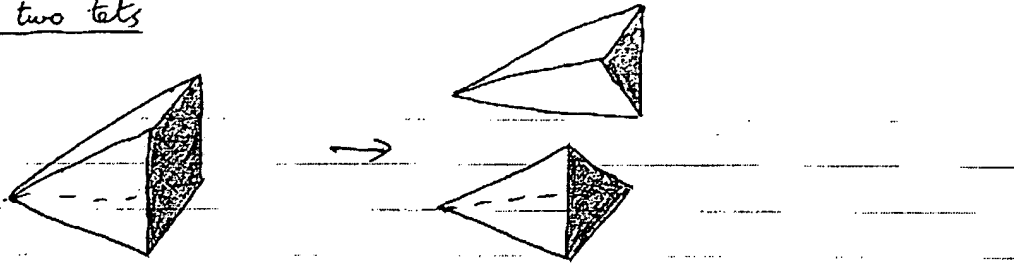
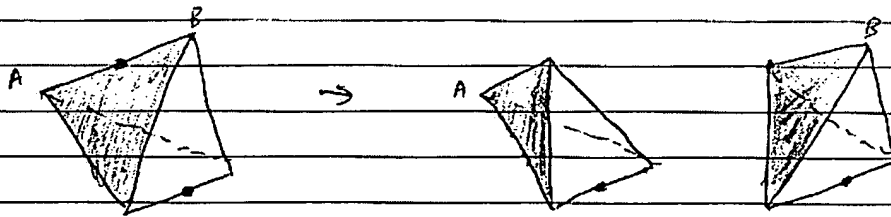


FIG. 13B

FIG. 13C

Template for splitting a tet on

2 edges (opposite)



The final compact result will be:

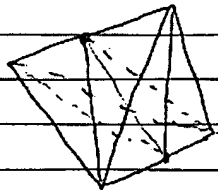
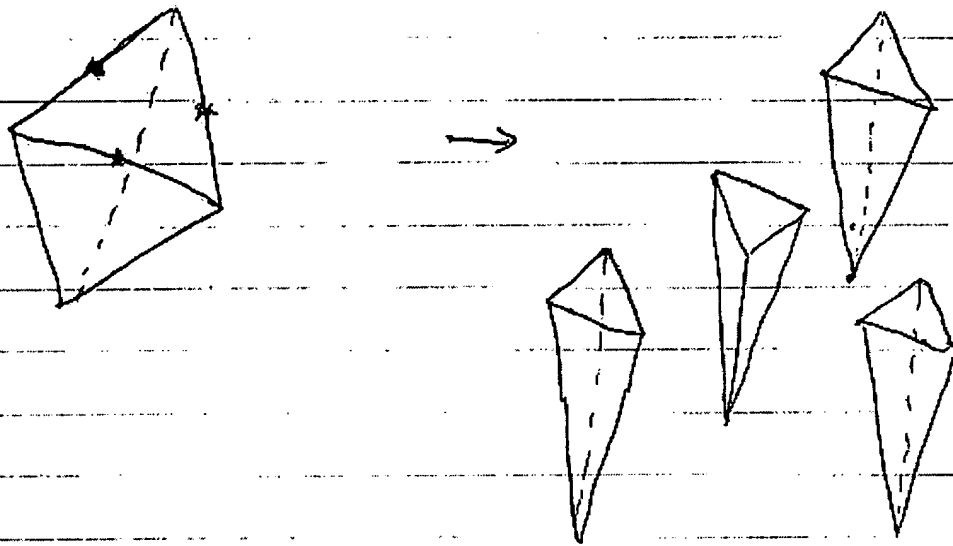


FIG. 14A

Template for splitting a tet on:
3 edges (shared face)



In closed form

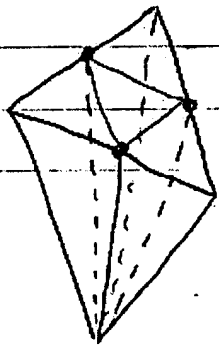
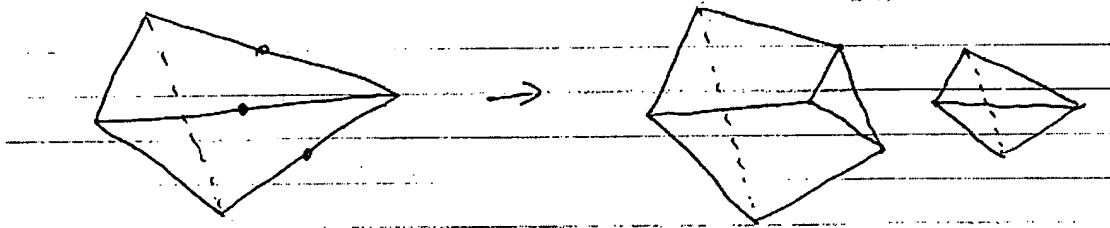


FIG.14B

Template for splitting a tet on:
3 edges (non-shared face)



The final result will be:

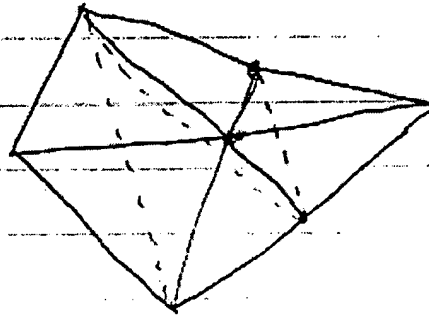


FIG. 14C

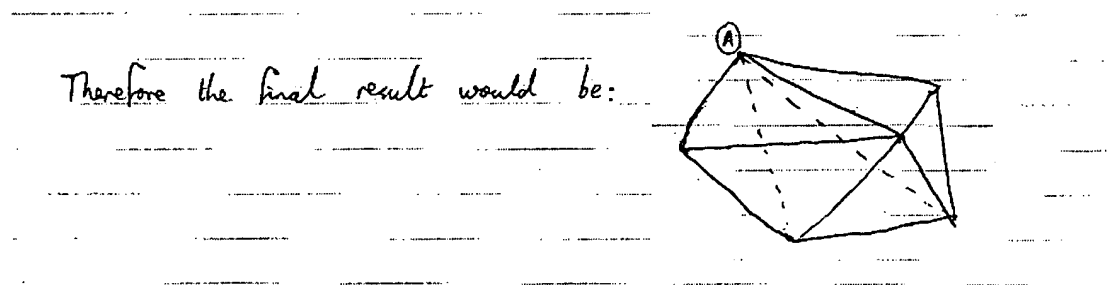
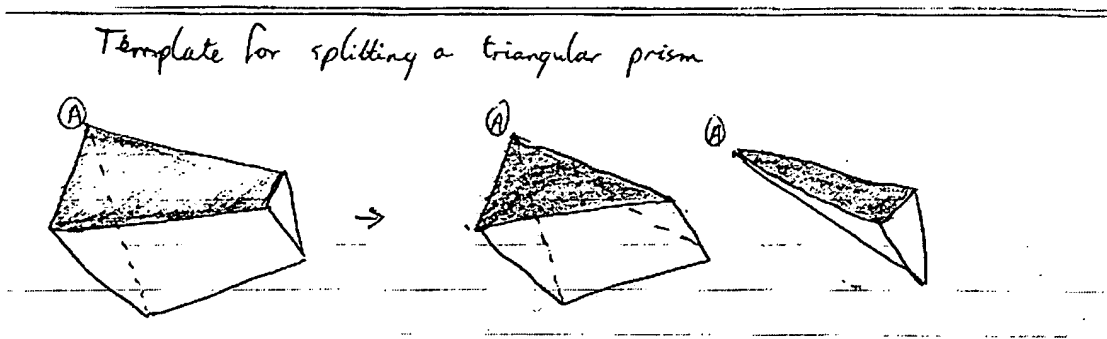


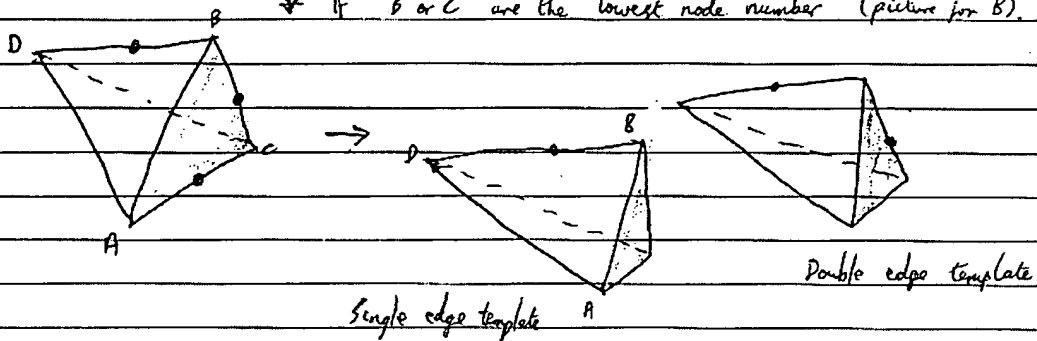
FIG. 14D

Template for splitting a tet on

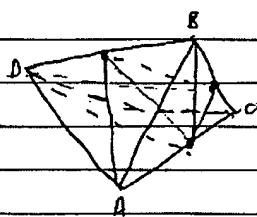
3 edges (in series)



-non face, non shared point

* If B or C are the lowest node number (picture for B).

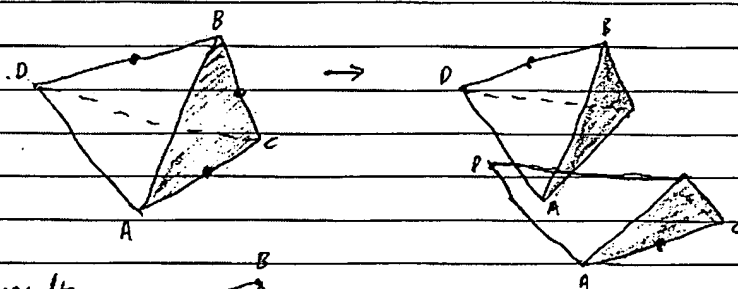


Final result



all faces are either  or 

* If A or D are the lowest node number



These two bodies
can be further
split by the single
edge template

final result

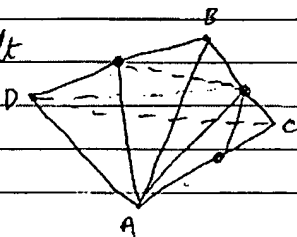
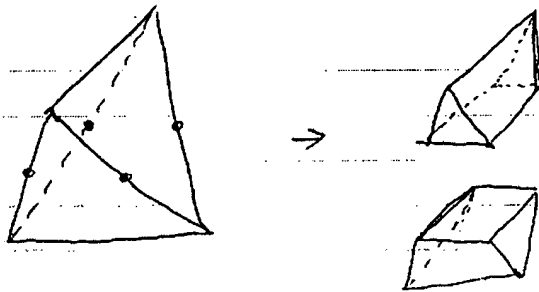
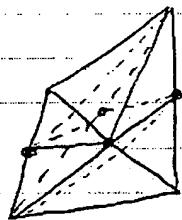


FIG. 15A

Template for splitting a tet on
4 edges (Opposite edges)



The eventual split body in close form



The pattern on each ^{original} triangular face is:

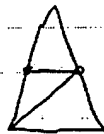
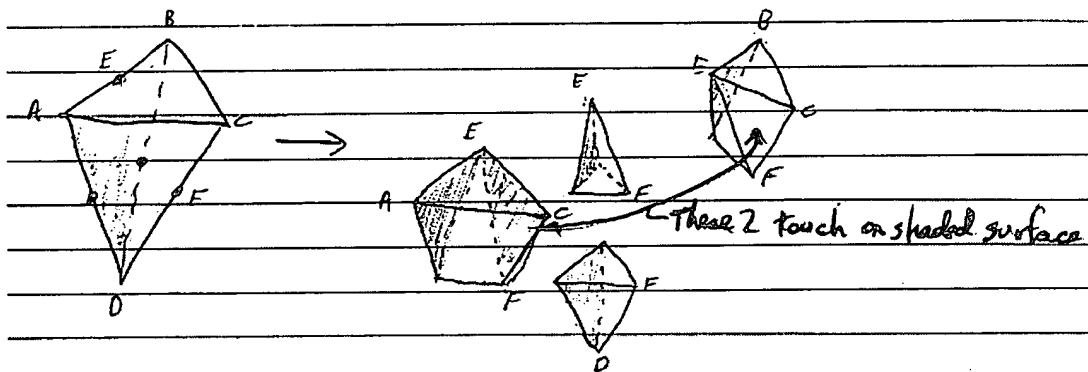


FIG. 15B

Template for splitting a tet on
4 edges (Adjacent edges)



The compacted original tet is:

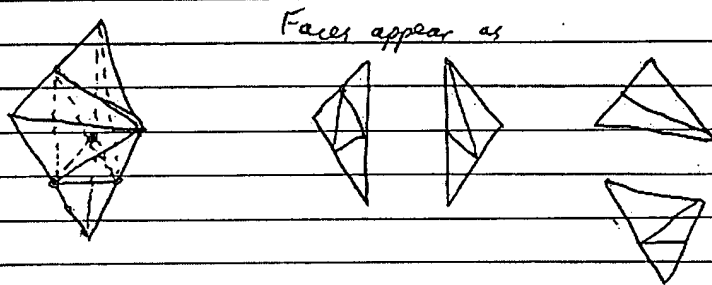
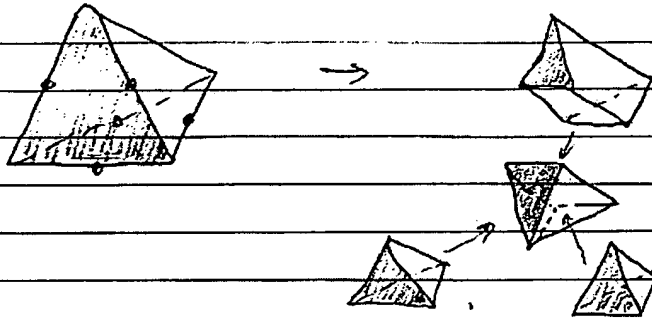


FIG. 16

Template for splitting a tet on:

5 edges



The final compacted result is

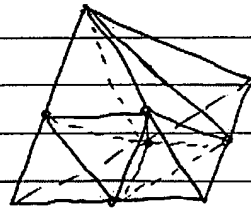
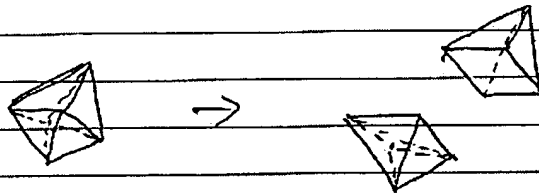
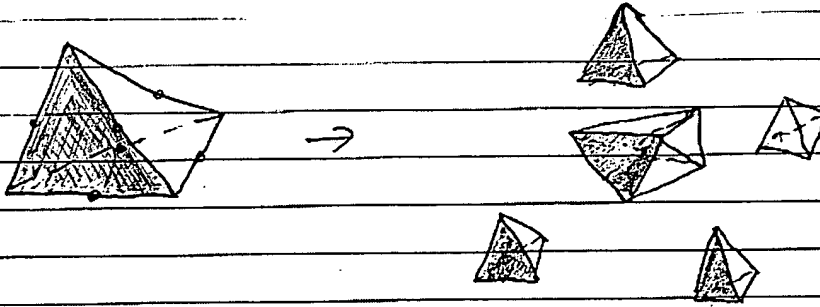


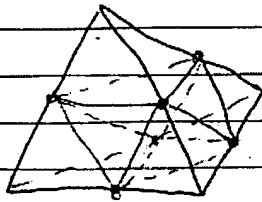
FIG. 17

Template for splitting a tet on

6 edges



The resulting compacted body is:



All faces have the follow split pattern

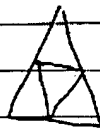


FIG. 18A & 18B

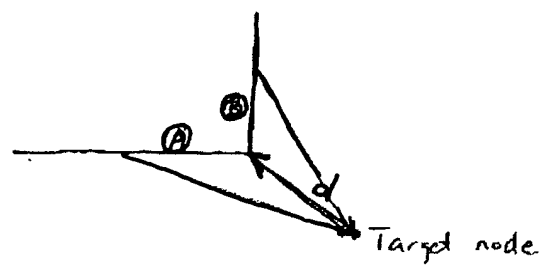
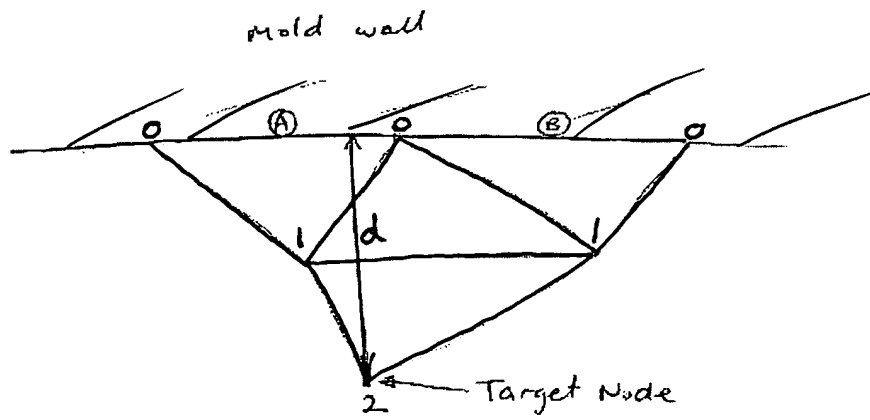


FIG. 19

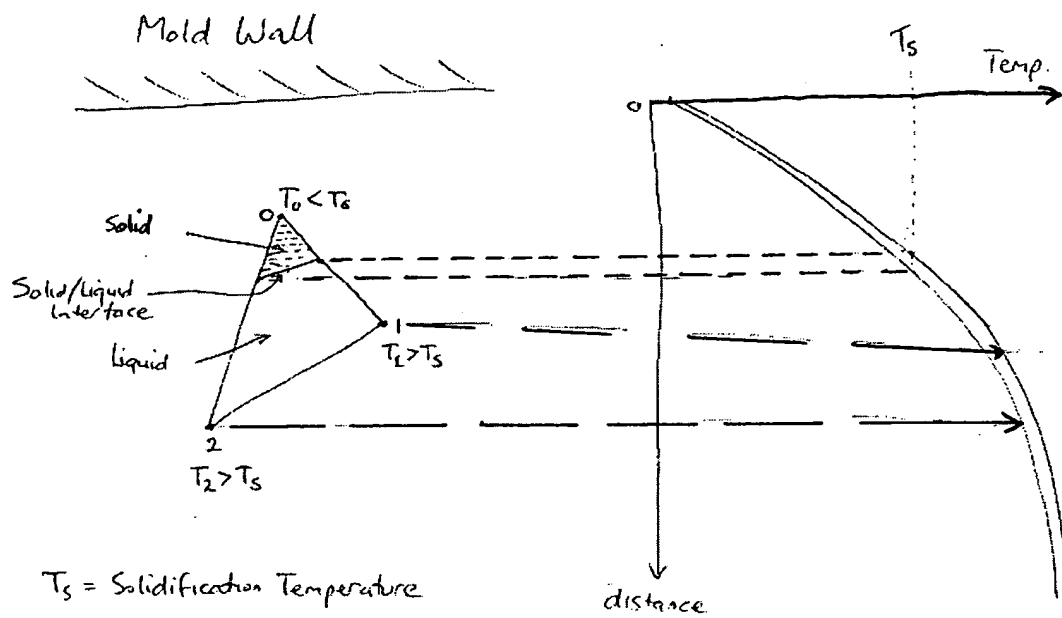


FIG. 20

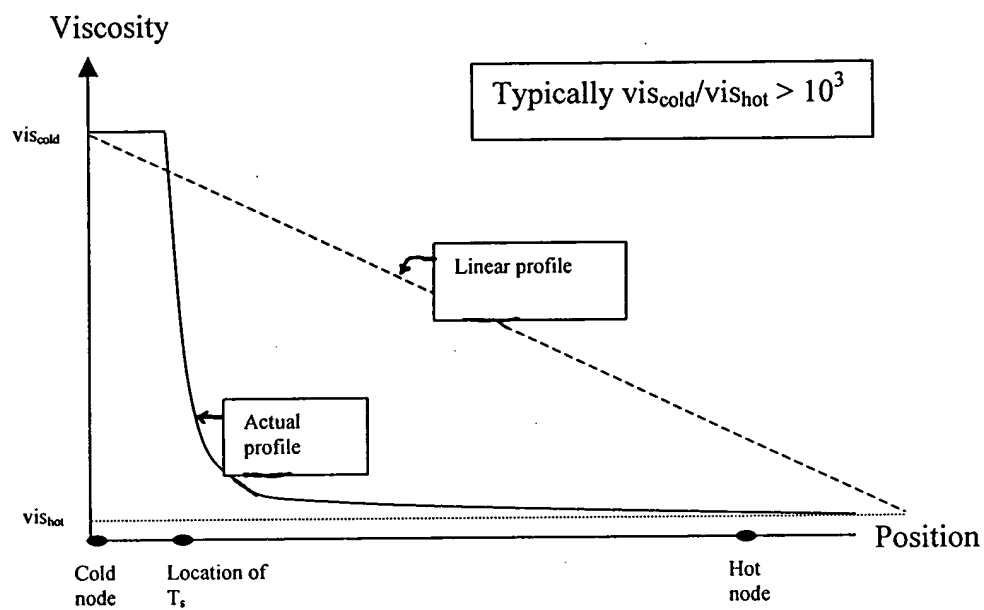


FIG. 21

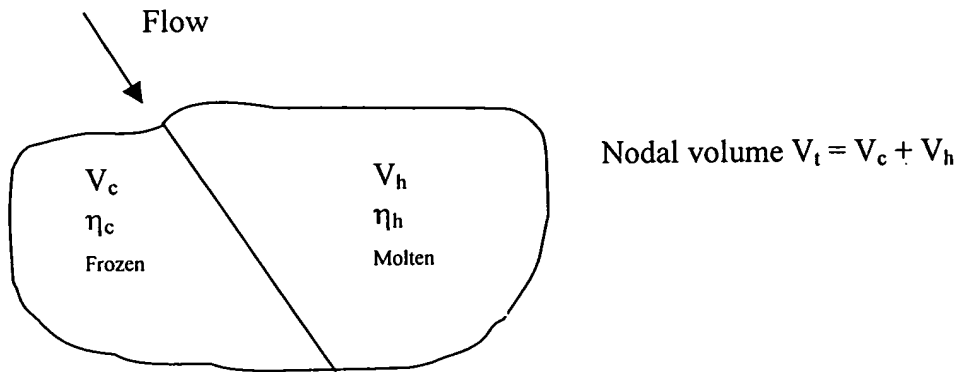


FIG. 21

FIG. 22

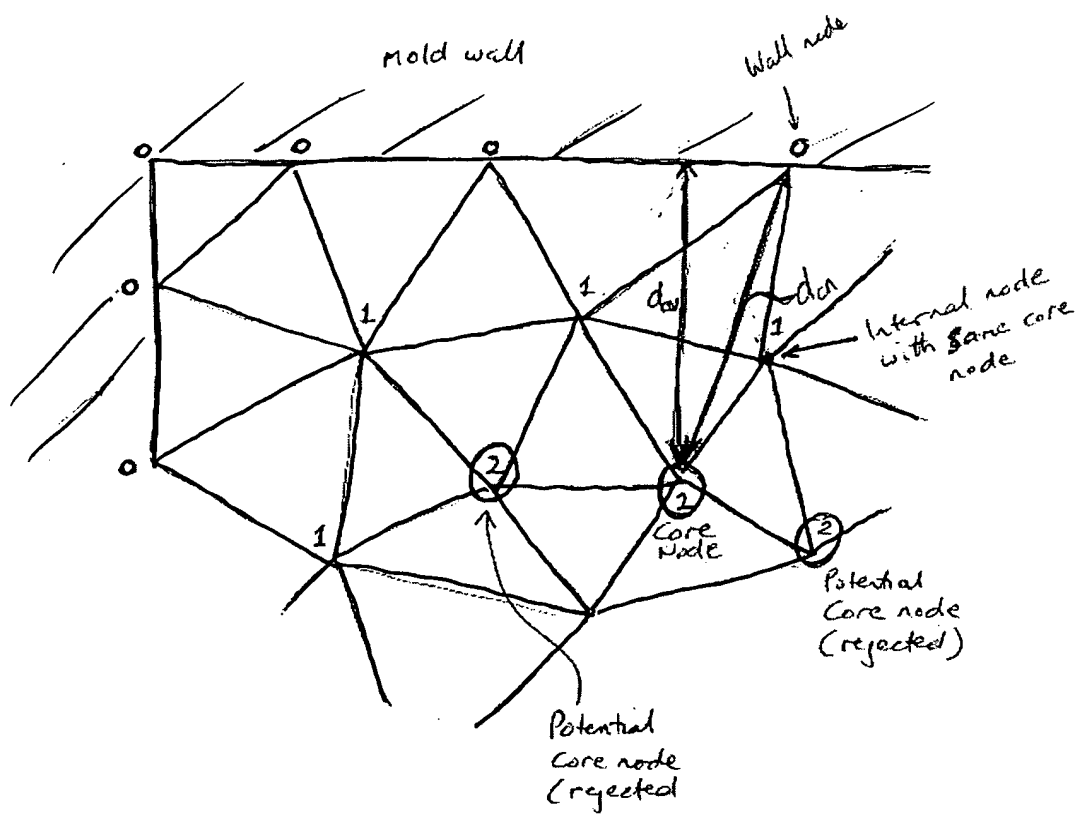


FIG. 23A, 23B, 23C

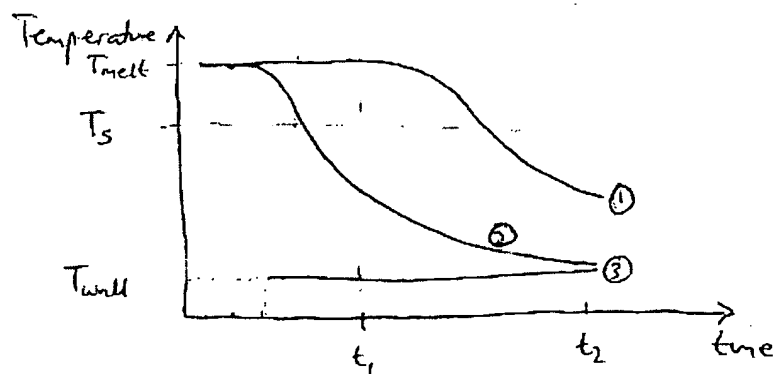
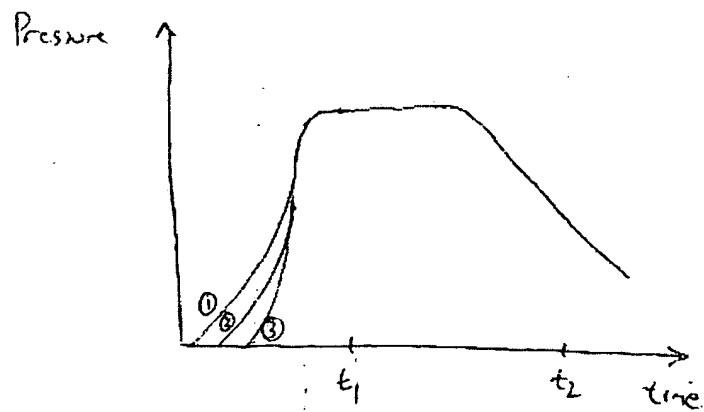
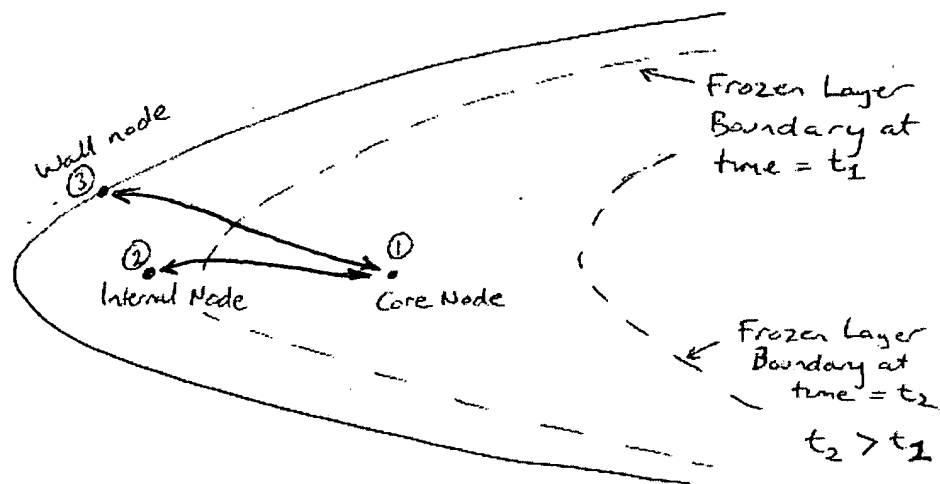


FIG. 24

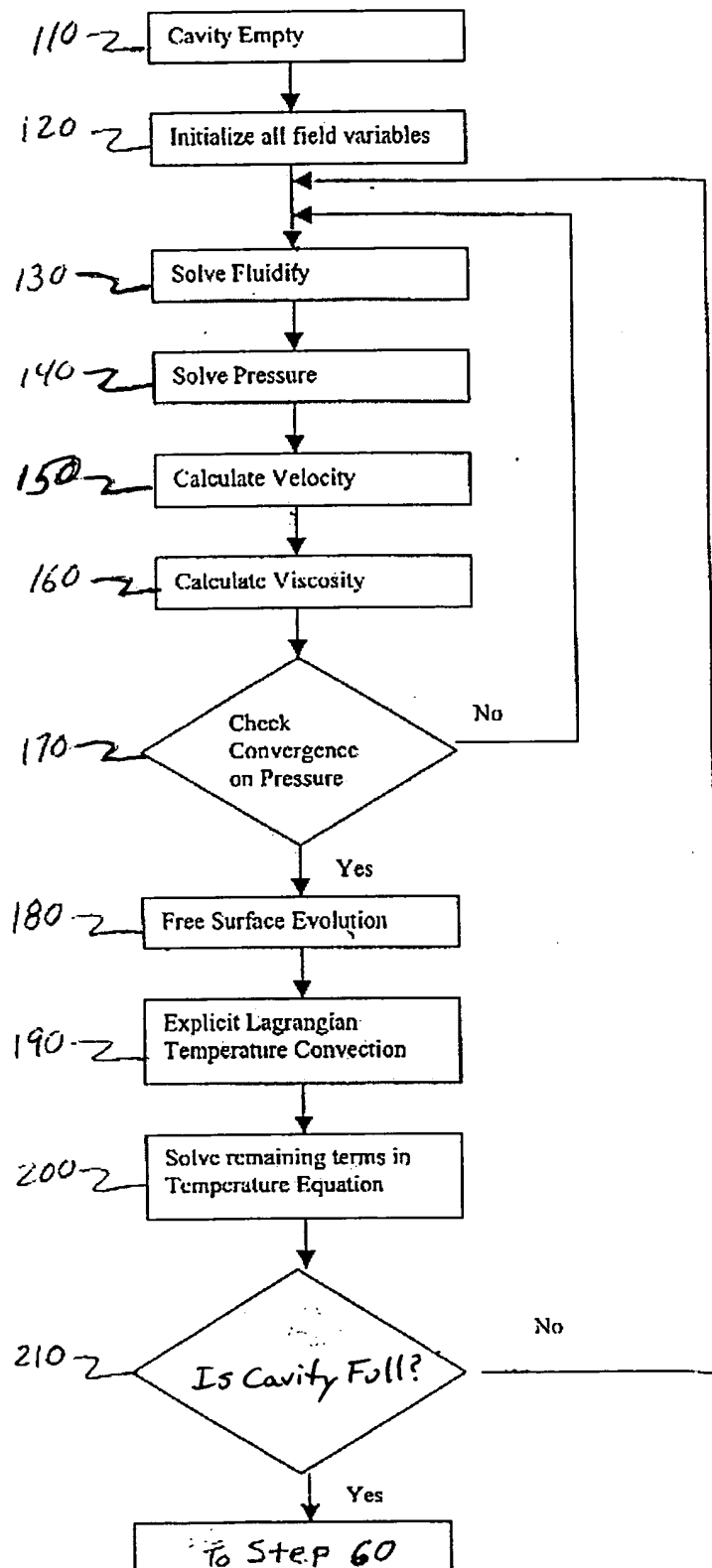


FIG. 25

